**Walking Challenge**  
**Description:** This is a gamified sustainability program that actively encourages users to reduce their carbon emissions by walking instead of short distance vehicle travel. Users must walk at least 3km to complete a session and earn points. This game allows users to record their walking routes using GPS, track distance and speed, and view history records, It also shows how much carbon the user has reduced by completing the challenge.

**User Story (if applicable):**  
*"As a user, I want to track my walking distance via GPS and see my carbon footprint reduction, so that I can actively contribute to sustainable mobility and reduce emissions."*

**1. Acceptance Criteria**

Define what needs to be met for this item to be considered **complete**.

✅ Users can start, pause, and stop a walking session.

✅ The game tracks distance, time, and speed accurately using GPS.

✅ The page displays real-time tracking data, including distance covered, speed, and elapsed time.

✅ Users can view their past walking sessions in a history panel.

✅ A walking session is considered completed if the user covers at least 3km. Users will receive a success message and see their carbon footprint reduction if they complete 3km; otherwise, they will get a warning message.

✅ The system saves session data to the backend, including the route and duration.

**2. Requirements & Specifications**

Provide clear **functional** and **non-functional** details.

* **Functional:**

The system should display a map and track the user’s walking distance via GPS.

GPS tracking should update the user’s location in real-time.

Users can start, pause, and stop tracking.

Users can view their current walking progress on the game progress page.

If tracking is stopped: If the total distance is >= 3km, the session is marked as completed, and 30 points are awarded; If the total distance is <3km, the session is marked as incomplete, and no points are awarded.

The system must store session details and allow users to view history.

The system should send trip data to the backend and the backend should store their trips.

* **Non-functional:**

GPS tracking should have low latency to ensure that walking progress is updated in real time.

**Optional:** Include wireframes or process flow diagrams.

**3. Dependencies & Constraints**

* Users must enable GPS and authorize the app to access location information.
* A stable network connection is required to support real-time walking data upload.
* Data privacy regulations are followed to ensure the security of user location information.

**4. GWT**

Provide Given-Then-When for main cases and edge cases.

**Scene1:** Users successfully complete the 3 kilometers task

**Given:** The user enables GPS, starts the task challenge, and starts walking within the specified range.

**When:** The user walks up to 3 kilometers within the specified range.

**Then:** The system determines that the user has completed the task, rewards the user with 30 points and updates the user’s total points and leaderboard.

**Scene2:** Start tracking

**Given:** The user starts the challenge and GPS is enabled.

**When:** The user press the “Start” button.

**Then:** The tracking should begin, and their location should be updated on the map.

**Scene3:** Pause tracking

**Given:** The user is actively tracking a walk.

**When:** The user press the “Pause” button.

**Then:** The tracking should stop but allow resumption.

**Scene4:** Stop tracking

**Given:** The user has started tracking.

**When:** The user press the “End” button.

**Then:** The session should be saved, and they should be notified whether they met the 3km goal.

**Scene5:** View history

**Given:** The user has completed past walking sessions.

**When:** The user switch to the “History” tab.

**Then:** The user’s past sessions should be displayed.